CLAIMS

We claim:

1. A method for noninvasive screening of a human eye for the presence of a ferromagnetic foreign body, said method comprising:

providing at least one magnetic sensor, and means for processing sensed signals from said at least one magnetic sensor;

positioning said magnetic sensor in proximity to an eye of the patient;

applying a magnetic field to said eye;

moving at least one eye of the patient;

sensing a plurality of responses from said eye with said magnetic sensor, at a plurality of gaze orientations; and

outputting data corresponding to the magnetic susceptibility of a ferromagnetic foreign body within said eye.

2. The method recited in claim 1, wherein said outputting of data corresponding to magnetic susceptibility comprises outputting of data corresponding to the size of a ferromagnetic foreign body within said eye.

3. The method recited in claim 1, wherein said outputting of data corresponding to magnetic susceptibility comprises outputting of data corresponding to the location of a ferromagnetic foreign body within said eye.

4. The method recited in claim 1, further comprising moving said at least one eye of the patient from side to side.

5. The method recited in claim 1, further comprising moving said at least one eye of the patient up and down.

6. The method recited in claim 1, further comprising moving said at least one eye of the patient in a predetermined pattern.

7. The method recited in claim 6, further comprising:
providing a gaze fixation target visible to said eye of the patient;
moving said gaze fixation target in said predetermined pattern; and
following said gaze fixation target with said eye of the patient.

8. The method recited in claim 6, further comprising:
providing a plurality of gaze fixation targets visible to said eye of the patient;
arranging said plurality of gaze fixation targets in said predetermined pattern; and
sequentially gazing at each of said gaze fixation targets, in a predetermined order, with said eye of the patient.

9. The method recited in claim 1, further comprising:
positioning said magnetic sensor in proximity to a first eye of the patient;
providing a gaze fixation target visible to a second eye of the patient;
moving said gaze fixation target in a predetermined pattern; and
following said gaze fixation target with said second eye of the patient.

10. The method recited in claim 1, further comprising:
positioning said magnetic sensor in proximity to a first eye of the patient;
providing a plurality of gaze fixation targets visible to a second eye of the patient;
arranging said plurality of gaze fixation targets in a predetermined pattern; and
sequentially gazing at each of said gaze fixation targets, in a predetermined order, with said second eye of the patient.

11. The method recited in claim 1, further comprising moving said at least one eye of the patient in a random fashion.

12. The method recited in claim 1, further comprising providing a magnetic sensor which functionally operates at room temperature and minimizes noise due to temperature fluctuations at said magnetic sensor.

13. The method recited in claim 12, further comprising:

providing an applied field source; and

applying said magnetic field with said applied field source.

14. The method recited in claim 13, wherein said applied field source includes an applied field coil, and further comprising supplying current to said applied field coil to generate said magnetic field.

15. The method recited in claim 14, wherein said supplying of current comprises supplying alternating current to said applied field coil.

16. The method recited in claim 14, wherein said supplying of current comprises supplying direct current to said applied field coil.

17. The method recited in claim 13, wherein said applied field source includes a permanent magnet, and further comprising positioning said permanent magnet in proximity to said patient to apply said magnetic field.

18. The method recited in claim 12, further comprising:

mounting said at least one magnetic sensor in a head mounted display; and

rejecting any spurious magnetic signals caused by motion of said head mounted display with respect to any ambient magnetic field.

19. The method recited in claim 1, further comprising providing a SQUID magnetic susceptibility detection system.

20. The method recited in claim 19, further comprising:

providing an applied field source; and

applying said magnetic field with said applied field source.

21. The method recited in claim 20, wherein said applied field source includes an applied field coil, and further comprising supplying current to said applied field coil to generate said magnetic field.

22. The method recited in claim 21, wherein said supplying of current comprises supplying direct current to said applied field coil.

23. The method recited in claim 20, wherein said applied field source includes a permanent magnet, and further comprising positioning said permanent magnet in proximity to said patient to apply said magnetic field.

24. The method recited in claim 1, further comprising:

providing a flexible container holding a deformable material whose magnetic susceptibility properties approximate those of human tissue; and

placing said flexible container between said magnetic sensor and said eye of the patient.

25. The method recited in claim 1, further comprising:

providing a plurality of said magnetic sensors at a plurality of remote locations;

providing a central computer processing station;

positioning each said remote magnetic sensor in proximity to an eye of a patient;

applying a magnetic field to each said eye;

moving each said eye and sensing the magnetic susceptibility responses with an associated magnetic sensor, at a plurality of gaze orientations;

transmitting said plurality of magnetic susceptibility responses to said central computer processing station via a communication system; and

interpreting said magnetic susceptibility responses with said central computer processing station.

26. The method recited in claim 25, further comprising transmitting said plurality of said magnetic susceptibility responses to said central computer processing station via the Internet.

27. The method recited in claim 25, further comprising providing real-time interactive feedback between said remote source-sensor units and said central computer processing station.

28. The method recited in claim 25, further comprising performing instantaneous autointerpretation of said magnetic susceptibility responses using artificial intelligence.

29. The method recited in claim 25, further comprising performing instantaneous autointerpretation of said magnetic susceptibility responses using a neural network.